

Researching the Child ~ Nature Connection



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**A White Paper Prepared By Nicole L. Migliarese
for California State Parks' Children in Nature Campaign**

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Any opinions, findings, conclusions or recommendations expressed in this report are those of the authors and do not necessarily reflect the official views, opinions, or policy of California State Parks.

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Abstract: *Today's children are much less connected to the natural world than at any other time in history. This natural connection has been replaced in various ways – greater interaction with the digital ('plugged-in') world, less unstructured outdoor play, and via growing urbanization. This decreased exposure to nature has consequences that we are just beginning to understand. The negative outcomes for children of this 'nature-deficit' include sky-rocketing rates of childhood obesity and type-two diabetes, increased psychological stress...all due to diminishing opportunities for children to engage in unstructured, creative play in the out-of-doors.*

Introduction

The lives of children have radically changed over the course of the past century. No longer is free time spent outdoors inventing games with neighborhood friends or exploring the pockets of nature that existed in backyards or empty lots. A growing body of research has demonstrated that the natural world holds numerous benefits for both children and adults, alike. While it is still mysterious just how the mind, body and spirit gain from exposure to and experiences with nature, empirical evidence forces us to reexamine and rethink the lives of today's children.

First dubbed 'nature-deficit disorder' by Richard Louv (2005), this disconnection with the natural world is both complex and worrisome. Throughout the present article, the phrases 'nature deficit' and 'exposure to nature' will be used. In basic terms, these phrases embody what could be seen as the problem and the solution, respectively.

Nature-deficit suggests that children are suffering from a lack of exposure to and experience with the natural world around them. Historically, humans have had an

intimate connection with the flora and fauna around them; ironically, though, the modern lifestyle is deficient of meaningful contact with plants and animals in our immediate surroundings. Unfortunately, the rate at which our lifestyles have changed has far outpaced the evolution of our cognitive, psychological, and physiological hard-wiring. Research across disciplines now suggests that this disconnect (both figurative and literal) has far-reaching consequences for the health and well-being of both individuals and the natural environment in which they act.

Conversely, exposure to nature is the means by which this connection is established and fortified. The natural environments in which children are immersed need not be areas referred to as ‘wild spaces’ or even the wilderness found in state or national parks. Nature, in this context, can refer to the small (if not tiny) pockets of plant and animal life that can be found in urbanized areas, the green spaces in suburban developments, or the landscapes of rural areas...essentially, nature is everywhere though we often fail to attend to its presence in our daily lives. Despite its omnipresence, our children are just not connected to the natural world. A discussion of the reasons for the child – nature divide follows.

Reasons for the Disconnection from Nature

Technology

Today’s youth have been dubbed ‘digital natives’ and ‘indoor children.’ However society refers to them, this generation of children is unlike any other. Children across the state, as well as across the nation, have never been more technologically-savvy than they are

today (Yahoo! Media Relations, 2003). Nor has any other generation of children been more linked to the world around them, so long as that world is mediated by technology made possible by the internet (Levin & Arafah, 2002). Our local children have peer groups made up of youth in India, Brazil, and China. YouTube and MySpace unite them in ways we couldn't have imagined when we were ourselves children (Taylor, 2005). But all of this technological interaction has come at a price. The everyday lives of children have moved indoors and inside of a handheld device. This shift in lifestyle trickles down from adults to even the youngest children. A recent article in the journal *Pediatrics* reported that one-third of American children aged 3 to 6 years have a television in their bedroom (Vandewater, Rideout, Wartella, Huang, Lee & Shim, 2007). The ways in which children once connected with the natural world – curious exploration, free play outdoors, experiences with nature – have quietly faded into the background, if not disappeared altogether from the lives of our plugged-in youngsters.

Fear of the Known and Unknown

While more than 80 percent of the U.S. population lives in urban areas, over 94% of land in this country was classified as rural by the 2000 U.S. Census Bureau (Federal Highway Administration, 2003, 2004). But the open spaces have become foreign to most. Life and all that it entails for today's children is represented by the *urban* (Louv, 2005). In the mind's eye of the modern parent, free time possesses many dangers. Many feel that time spent unsupervised by an adult invites 'stranger danger' and threats from within the larger community (including violence/crime and exposure to drugs). A media frenzy in the 1980s surrounding rising rates of childhood abductions sparked parents' fears that their child was unsafe playing unsupervised outdoors (Lee, 1993). This fear altered

unstructured free time once spent playing on neighborhood streets as children were brought inside into private homes and play took on a new face. Even today, this fear remains exaggerated – true kidnappings are rare in the United States, though incidences are highly publicized. A U.S. Census survey of parents found that one in five parents keeps their children indoors as much as possible out of fear of the world outside their front door (Dye & Johnson, 2006).

Parents are not the only ones that have become more afraid of ‘nature.’ Children once had rich and diverse experiences in the natural world immediately surrounding their homes. Today, the media produces 15 second sound bites about close encounters between wildlife and people. The sensationalized details permeate urban legend lore which, in turn, intensifies people’s perceptions of the dangers of the natural world. This is despite statistics which repeatedly show children are more likely to be harmed by objects of modernity – the gun is exponentially riskier than the spider (Heerwagen & Orians, 2002). Summarizing the profound influence fear has had on altering the fundamental shape of childhood, Louv notes, “fear is the emotion that separates a developing child from the full, essential benefits of nature. Fear of traffic, of crime, of stranger-danger—and of nature itself” (2005).

Time Otherwise Spent

In a twist of irony, today’s children often do spend time outside. They’re on soccer teams at school or on the community softball team. Even preschoolers can now enroll in peewee sports. Nearly all varieties of organized sports have grown in popularity across the

country and across all age groups. Presently, over 41 million children participate in organized competitive sports (Hilgers, 2006). While playing on a team remains an important hallmark of childhood, it should not be equated with unstructured outdoor play. According to children themselves, participation in sports does not ‘count’ as play; it’s more like work for them (Louv, 1990). In an investigation of how Americans spend their time, a multi-decade study found that children’s free playtime dropped approximately 25% between 1981 and 1997, apparently due to an increase in the amount of time spent in more structured activities (Hofferth & Sandberg, 2001).

Parents’ role in scheduling the lives of children has also changed. Today’s parents are much more involved in the minute-to-minute details of youngsters – a change that delimits the unstructured, creative play that was once a hallmark of childhood (Chamberlin, 2006). What had previously been inextricably linked with experiences in and with the natural world, ‘free play’ no longer involves fort building, tree climbing, or peeking under rocks next to the back steps (Heerwagen & Orians, 2002), all elements that tap into a child’s imagination and sense of wonder.

School Reforms

In a piece dedicated to deconstructing the ways our schools of today exacerbate the child – nature divide, Monke points out that schools have turned up the thermostat on an already super-hot technology driven American culture (2007). As the counterbalance to the overly plugged in world, schools should “unplug” and focus their efforts on

developing the health of children's inner lives by giving them experiences with the real world, as well as the symbolic world (ibid.).

Several obstacles currently prevent schools from radically reforming their structure and their curricula; of these, No Child Left Behind looms large. This federal education policy includes no direct mention of any form of environmental education. In fact, on the national level, environmental education is not even under the jurisdiction of the Department of Education. Matters of learning in and about the natural world are overseen by the Environmental Protection Agency, as mandated by the Environmental Education Act of 1990. Standardized tests that measure students' proficiency in prescribed areas (also referred to as content standards, usually focused on literacy and math) rarely include topics defined as 'environmental science' and are, therefore, often excluded from a school's curriculum.

Above and beyond changes in standards and curriculum, school schedules have also changed. In a recent study of public elementary schools across the nation, nearly 15 percent of upper elementary children no longer have any recess time at all during the academic day (Parsad & Lewis, 2006). Even when playtime is permitted, air quality often forces children indoors (Breathe California, 2007). One of the last holdouts of childhood outdoor free play is being downsized or eliminated. Contact with the world outside of the built environment has been pared down, reorganized, reconfigured, and digitized.

Positive Outcomes of Being Connected to Nature

In his best-selling text, Louv captures the positive benefits of nature for children noting, “healing the broken bond between our young and nature is in our self-interest – not only because aesthetics or justice demands it, but also because our mental, physical, and spiritual health depend upon it and so does the health of the earth” (2005). Some claim that the benefits human reap from being connected to the natural world are hard-wired – we’re evolutionarily predisposed to operating in a world filled with natural kinds. This affinity is referred to as the biophilia hypothesis and has been forwarded by such scholars as Kellert, Wilson, and Kahn (see Kahn & Kellert, 2002; Kellert & Wilson, 1993). If warranted, this claim might lead to the connection between nature and human well-being, both physiologically and emotionally. When we look more closely at these possible benefits, especially for children, we find empirical evidence that supports the child – nature connection. Several significant positive outcomes for connecting children to the natural world will be discussed – physical and psychological well-being, inter- and intrapersonal skills, and cognitive functioning.

Physical and Psychological Well-Being

Obesity is a health issue that America can no longer deny. Rates of obesity have skyrocketed for all segments of the population in the U.S., particularly among children, prompting health officials to label the trend ‘the obesity epidemic’ (Ogden, Flegal, Carroll, Johnson, 2002). Paired with increasing weights, there is a correlated rise in the rates of type two diabetes in children, an affliction once almost exclusively seen in adults (CDC, 2000).

Beyond the physical benefits that time spent in nature affords, children also increase their ability to cope with stressors in their daily lives by interacting with the natural world (Wells & Evans, 2003). A study conducted in the UK demonstrated that people living in urban areas that had access to green spaces or gardens tended to have lower occurrence rates of mental disorders (Lewis & Booth, 1994).

Inter- and Intrapersonal Skills

The lives of today's children are complex. They're much more connected with the global community, yet this complexity demands greater skills in terms of both inter- and intrapersonal relations. And while the academic world has long been interested in investigating the social and emotional lives of children, it only recently took up the issue how the natural world might influence children's socio-emotional well-being. Emerging evidence demonstrates a link between experiences in the natural world and children's conflict resolution skills, their motivation and self-efficacy.

Cognitive Functioning

Considered essential for learning, attentional capacity in children has received much inquiry from the fields of medicine, education research, and cognitive psychology. Findings indicate that attentional capacity increases when children are surrounded by more natural, greener environments (Grahn, Martensson, Lindblad, Nilsson, & Ekman, 1997; Wells, 2000). Numerous other studies now demonstrate the therapeutic effects of both proximity to green spaces and time spent in natural environments for children that

struggle with the ability to control one's impulses and actions, particularly challenging features of Attentional-Deficit Disorder and Attentional-Deficit Hyperactivity Disorder (see Burdette & Whitaker, 2005; Kuo & Taylor, 2004; Taylor, Kuo & Sullivan, 2001 & 2002; Wells, 2000 for more on the ADD/ADHD and nature connection).

Analytical thinking is also positively impacted by time spent outdoors. Improvements in students' science and math knowledge are reflected in test score gains (AIR, 2005), creativity and problem-solving skills get better (Kellert, 2005), and their ability to make connections at both the proximal and distal levels (i.e., reasoning skills) also develop (Lieberman & Hoody, 1998) when the environment is utilized as a context for learning, teaching, and playing.

The Child – Nature Connection Today, Stewardship Tomorrow

Louv opens a chapter in his *Last Child in the Woods* with a quote from naturalist Robert Michael Pyle, "What is the extinction of a condor to a child that has never seen a wren?" (2005). Given the current environmental crises faced at both the local and global levels, there is an urgent concern for where the next generation of stewards will come from. Given that numerous studies on adult behaviors and beliefs about the environment point directly back to childhood experiences with the natural world (Chawla, 2006), what will become of pro-environmental attitudes and action when the children that grew up in a world devoid of natural experiences ages? Chawla has also found that the role of an adult who instills a respect for nature is paramount to a child's developing a stewardship ethic later in life (ibid). What if parents and teachers, children's most proximal sources of

role models, are wary of taking their children out-of-doors to share with them the natural world or are too constricted in their teaching practices to incorporate any type of nature study into their curriculum? Who, then, will serve in this mentorship role?

A Growing National Phenomenon

As many will be aware, the issues related to the need to reconnect children with the natural world have received growing attention over the last several years. This increasing interest has resulted in many local initiatives springing up around the country as well as the convening of several national-level gatherings. Among these, the 2006 National Dialogue on Children and Nature, held at the National Conservation Fund's West Virginia Training Center, allowed multiple stakeholders to coalesce around the child-nature disconnect. Similarly, the National Forum on Children and Nature has been organized as a grant-making coalition that had begun to support exemplary projects and programs from across the nation that directly connect children with outdoors.

California's Children in Nature Campaign

"All California children will be inspired to actively and creatively engage with and appreciate the natural environment." Such is the vision statement of the ***California Children in Nature – A Campaign for Action***, a state-wide initiative of California State Parks. A primary goal of the Campaign is to make the child ~ nature connection issue accessible to all segments of California society. The initiative will coordinate and promote State Park programs that connect children with nature, provide resources to raise awareness and understanding of the critical need for this effort, work with partners to

facilitate regional collaborations, and work directly with communities to bolster capacity and promote sustainability of efforts. The “California Children’s Outdoor Bill of Rights” is one of the Campaign’s initiatives, outlining a list of activities and corroborating research that child should experience before the age of 14. The goal of the Campaign is to focus on awareness and action, and to expand the scope and number of entities that can play an important role in overcoming barriers and/or providing direct services. California State Parks will also develop a best-practices evaluation mechanism to promote and assess programmatic outcomes at both the local and state-wide levels. By engaging diverse partners in the Children in Nature Campaign, California State Parks aims to raise awareness of the ‘children in nature’ issue at all levels of Californian society and to facilitate the actions necessary to bring about change.

California State Parks

Our Mission

To provide for the health, inspiration and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation.

California Department of Parks and Recreation manages more than 270 park units, which contain the most diverse and some of the finest collections of natural, cultural, and recreational resources to be found within California. These treasures are as diverse as California: From the last stands of primeval redwood forests to vast expanses of fragile

desert; from the lofty Sierra Nevada to the broad sandy beaches of our southern coast; and from the opulence of Hearst Castle to the vestiges of colonial Russia.

California State Parks is the largest state park system and contains the largest natural and cultural heritage holdings of any state agency in the nation. State park units include underwater preserves; redwood, rhododendron, and wildlife reserves; coastal wetlands, estuaries, beaches, and dune systems recreation areas, wilderness areas, reservoirs; state historic parks, historic homes, Spanish era adobe buildings, museums, visitor centers; lighthouses, ghost towns, and off-highway vehicle parks. These parks protect and preserve an unparalleled collection of culturally and environmentally sensitive structures and habitats, threatened plant and animal species, ancient Native American sites, historic structures and artifacts . . . the best of California's natural and cultural history.

California State Parks consists of nearly 1.4 million acres, with over 280 miles of coastline; 625 miles of lake and river frontage; nearly 15,000 campsites; and approximately 3,000 miles of hiking, biking, and equestrian trails.

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References

American Institutes for Research. (2005). *Effects of Outdoor Education Programs for Children in California*. Submitted to The California Department of Education. Sacramento, CA.

Breathe California of Sacramento-Emigrant Trails. (2007). *Recommendations for Schools and Others on Poor Air Quality Days**. Website accessed on November 17, 2007.

Burdette, H.L., & Whitaker, R.C. (2005). Resurrecting free play in young children: Looking beyond fitness and fatness to attention, affiliation, and affect. *Archives of Pediatrics & Adolescent Medicine* 2005(159), pp 46-50.

Centers for Disease Control and Prevention. (2000). *CDC funds registries for childhood diabetes*. Press Release from CDC/National Center for Chronic Disease Prevention & Health Promotion. Accessed on-line 1 November 2007 at <http://www.cdc.gov/od/oc/media/pressrel/r2k1226.htm>.

Chamberlin, J. (2006). Childhood revisited. *Monitor on Psychology* (37), 3, p 64.

Chawla, L. (2006). Learning to love the natural world enough to protect it. *Barn* (2), pp 57-78.

Dye, J.L. & Johnson, T. (2006). *A Child's Day: 2003 (Selected Indicators of Child Well-Being)*. Current Population Reports, pp70-190. Washington, DC: U.S. Census Bureau.

Federal Highway Administration. (2003). *Frequently Asked Questions: Applying 2000 Census Data to Urbanized and Urban Areas*, March 31, 2003 Version. Washington, DC: U.S. Department of Transportation. <http://www.fhwa.dot.gov/planning/census/faq2cdt.htm>.

Federal Highway Administration. (2004). *Census 2000 Population Statistics: U.S. Population Living in Urban vs. Rural Areas*. February 9, 2004 Version. Washington, DC: U.S. Department of Transportation. <http://www.ibrc.fhwa.dot.gov/planning/census/cps2k.htm>

Grahn, P., Martensson, F., Lindblad, B., Nilsson, P. & Ekman, A. (1997). Outdoors at daycare. *City and Country* 145.

Heerwagen, J.H. & Orians, G.H. (2002). The ecological world of children. In Kahn, P.H., Jr. & Kellert, S.R. *Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations*. Cambridge, MA: The MIT Press.

Hilgers, L. (2006). *Youth sports drawing more than ever*. CNN. Web article accessed online 27 September 2007 at <http://www.cnn.com/2006/US/07/03/rise.kids.sports/index.html>.

Hofferth, S.L. & Sandberg, J.F. (2001). Changes in American children's use of time: 1981-1997. In Owens, T. & Hofferth, S.L. (Eds.). *Children at the Millennium: Where Have We Come From, Where Are We Going?* Amsterdam, the Netherlands: Elsevier Science Publishers.

Kahn, P.H., Jr. & Kellert, S.R. (Eds.) (2002) *Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations*. Cambridge, MA: The MIT Press.

Kellert, S.R. & Wilson, E.O. (1993). *The Biophilia Hypothesis*. Washington, DC: Island Press.

Kellert, S.R. (2005). Nature and Childhood Development. In Kellert, S.R. (Ed.) *Building for Life: Designing and Understanding the Human-Nature Connection*. Washington, DC: Island Press.

Kuo, F.E. & Taylor, A.F. (2004). A potential natural treatment for Attention-Deficit/Hyperactivity Disorder: Evidence from a national study. *American Journal of Public Health*, (94) 9, pp 1580-1586.

Lee, F.R. (1993). Tracking leads when the young disappear; in many missing-children cases, the danger is often close to home. *The New York Times*. Article published February 8, 1993.

Levin, D. & Arafah, S. (2002). *The Digital Disconnect: The Widening Gap Between Internet-Savvy Students and Their Schools*. American Institutes for Research for The Pew Internet & American Life Project. Washington, DC.

Lewis, G. & Booth, M. (1994). Are cities bad for your mental health? *Psychological Medicine*, 24, pp 913-916.

Lieberman, G.A. & Hoody, L.L. (1998). *Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning*. Poway, CA: SEER.

Louv, R. (1990). *Childhood's Future*. New York, NY: Anchor Books.

Louv, R. (2005). *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*. Chapel Hill, NC: Algonquin Books of Chapel Hill.

Monke, L. (2007). Unplugged schools. *Orion Magazine*. September/October 2007.

Ogden, D.L., Felgal, K.M., Carroll, M.D., & Johnson, C.L. (2002). Prevalence and trends in overweight among US children and adolescents, 1999-2000. *Journal of American Medicine*, 2002, 2888, pp. 1728-1732.

Parsad, B. & Lewis, L. (2006). *Calories In, Calories Out: Food and Exercise in Public Elementary Schools, 2005* (DOI: NCES 2006-057). U.S. Department of Education, Washington, DC: National Center for Education Statistics.

Taylor, A.F., Kuo, F.E. & Sullivan, W.C. (2002). Views of nature and self-discipline: Evidence from inner city children. *Journal of Environmental Psychology*, Special Issue on Environment and Children (22), pp 49-63.

Taylor, A.F., Kuo, F.E. & Sullivan, W.C. (2001). Coping with ADD: The surprising connection to green play settings. *Environment and Behavior* (33) 1, pp 54-77.

Taylor, P. (2005). *Teens more tech savvy than ever before*. Financial Times. December 6 2005. Article accessed on-line 24 September 2007 at <http://www.ft.com/cms/s/2/628ff726-669e-11d1-884a-0000779e2340.html>.

Vandewater, E.A., Rideout, V.J., Wartella, E.A., Huang, X., Lee, J.H., & Shim, M. (2007). Digital childhood: Electronic media and technology use among infants, toddlers, and preschoolers. *Pediatrics* (119) 5, pp e1006-e1015.

Wells, N.M. (2000). At home with nature: Effects of “greenness” on children’s cognitive functioning. *Environment and Behavior* (32), 6, pp 775-795.

Wells, N.M. & Evans, G.W. (2003). Nearby nature: A buffer of life stress among rural children. *Environment and Behavior* (25) 3, pp. 311-330.

Yahoo! Media Relations (2003). *Born to be Wired*. Press Release accessed on-line 24 September 2007 at <http://docs.yahoo.com/docs/pr/release1107.html>.